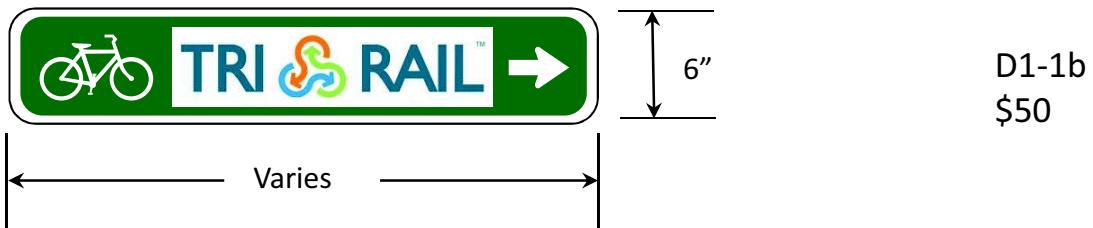
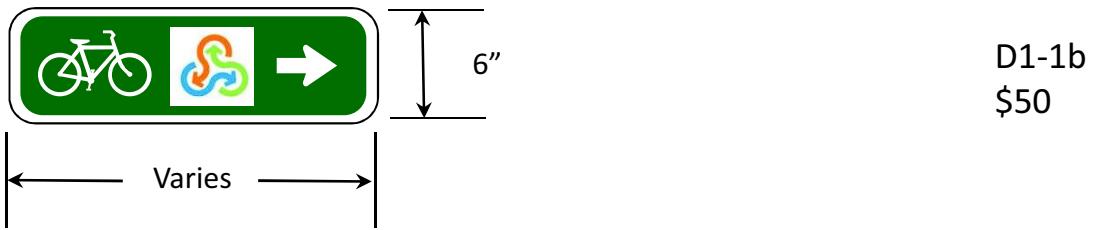


## Appendix A

### Routing Signs



D1-1b  
\$50



D1-1b  
\$50



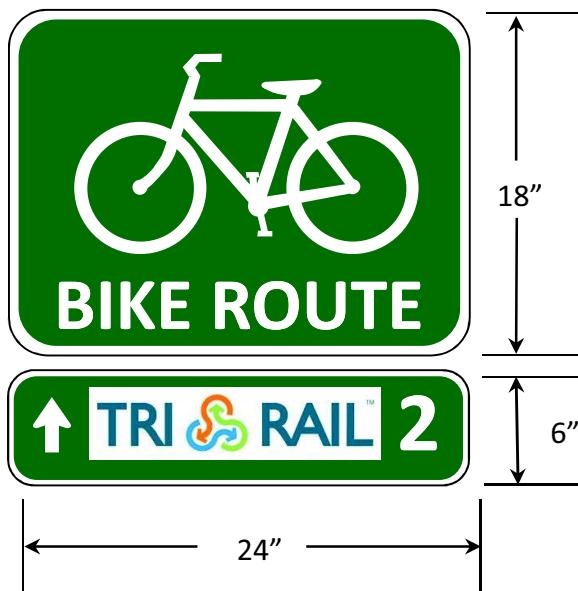
D1-1c  
\$50



M6-1  
\$25



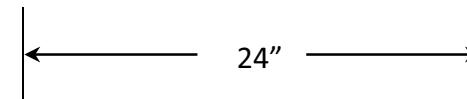
M6-3  
\$25



D11-1  
\$25



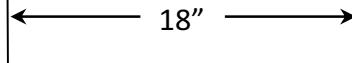
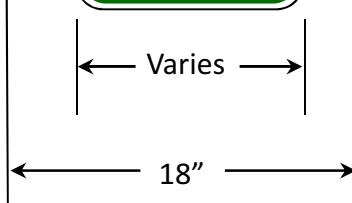
\$50



D11-1a



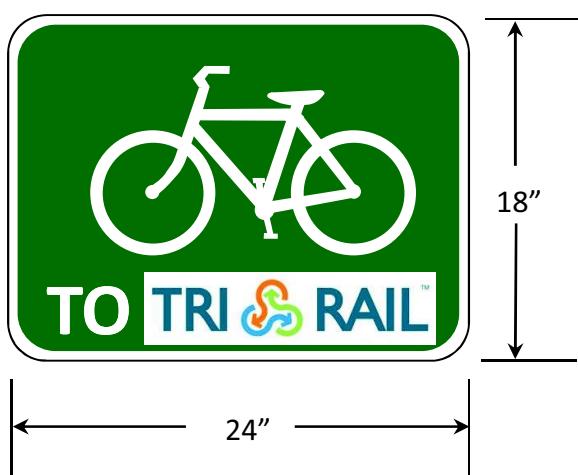
\$25



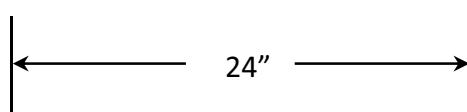
Varies

18"

\$50



D11-1C  
\$100

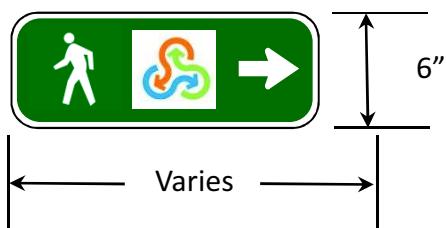


18"

24"



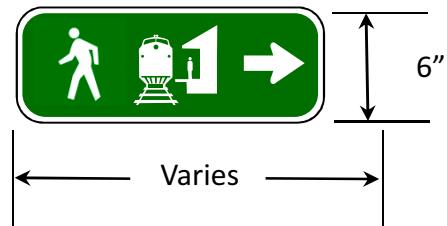
D1-1b-  
ped  
\$50



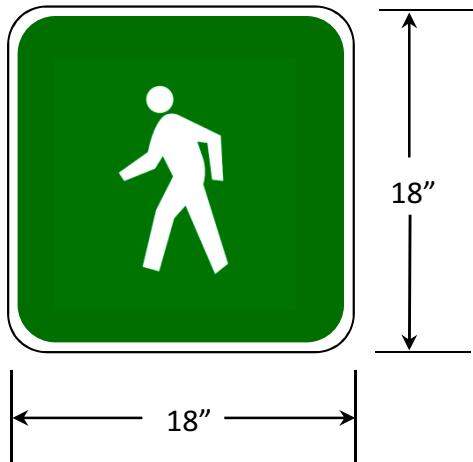
D1-1b-  
ped  
\$50



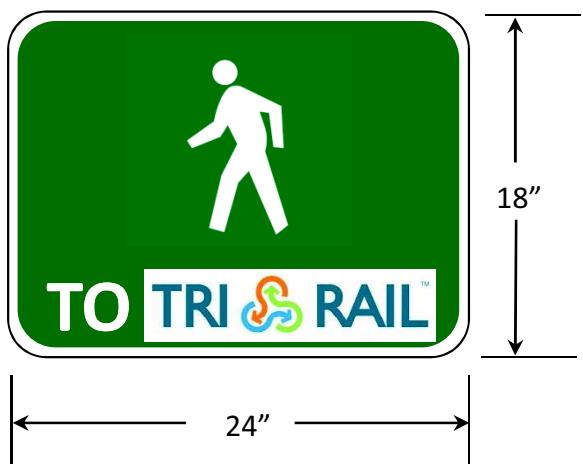
D1-1c-  
ped-f  
\$50



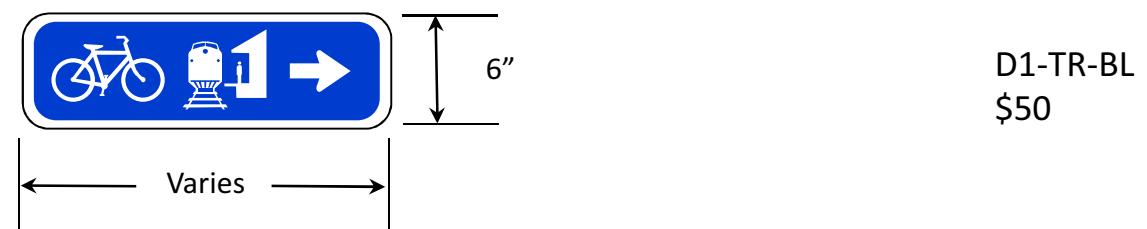
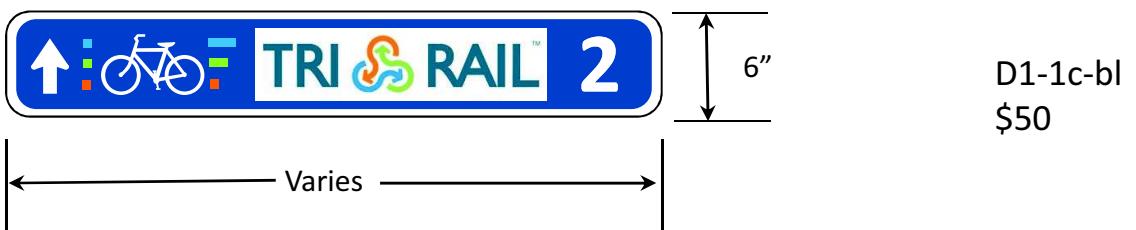
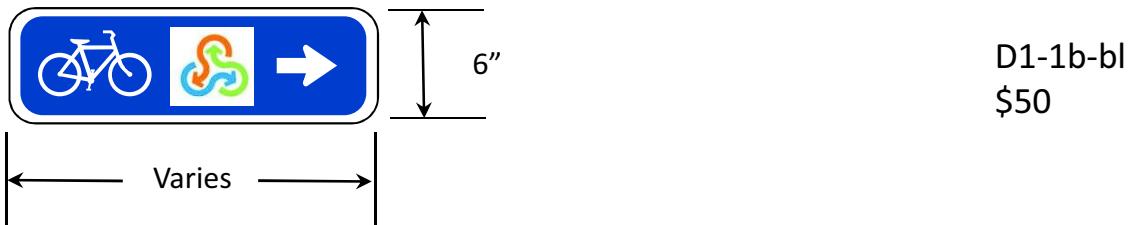
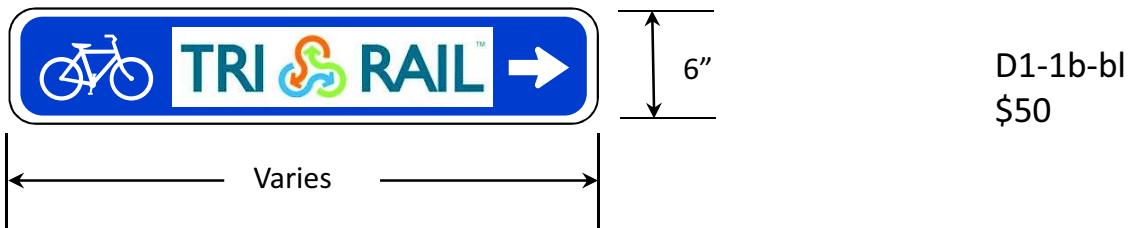
D1-1b-  
ped  
\$50



D11-1a-  
ped  
\$25



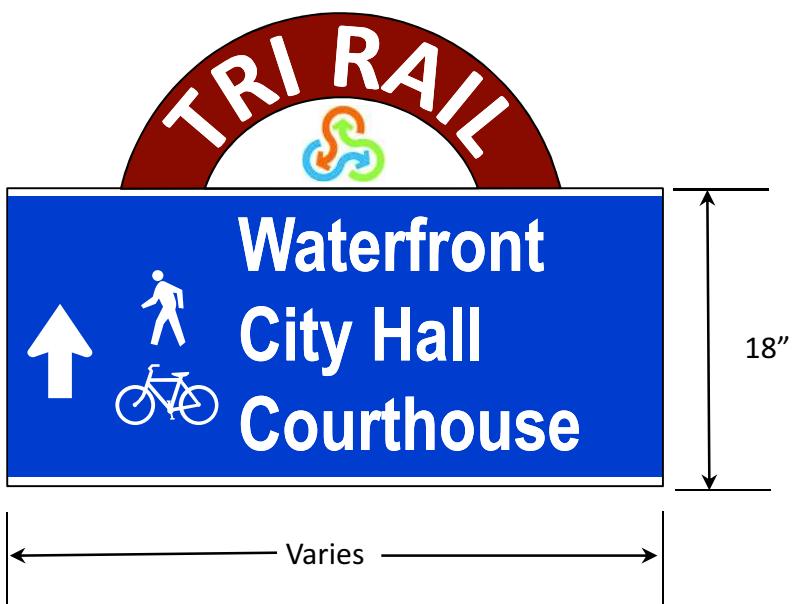
D11-1C-  
ped  
\$100





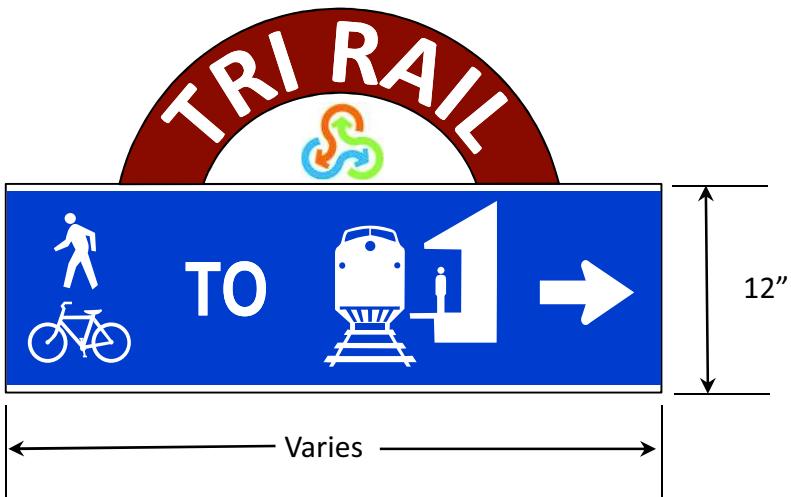
Optional  
Enhancement  
Marker

INF-1  
\$200



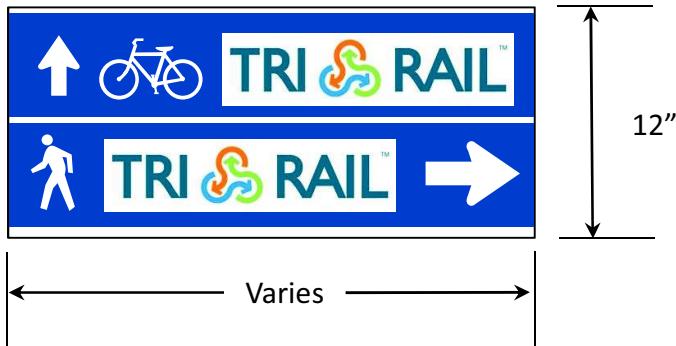
Optional  
Enhancement  
Marker

INF-2  
\$200

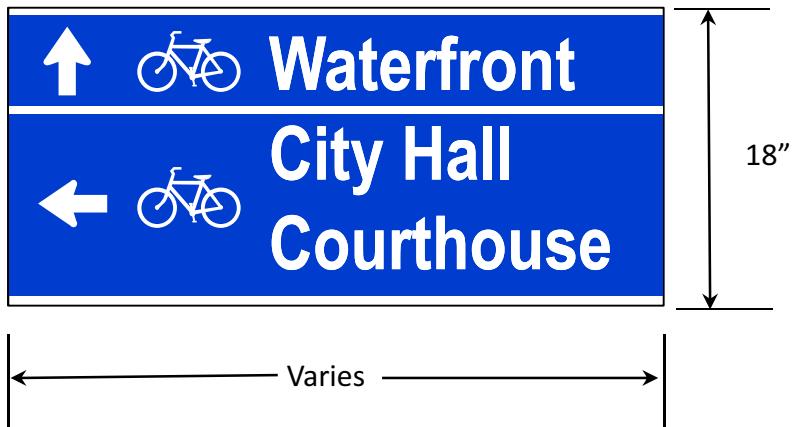


Optional  
Enhancement  
Marker

INF-3  
\$200



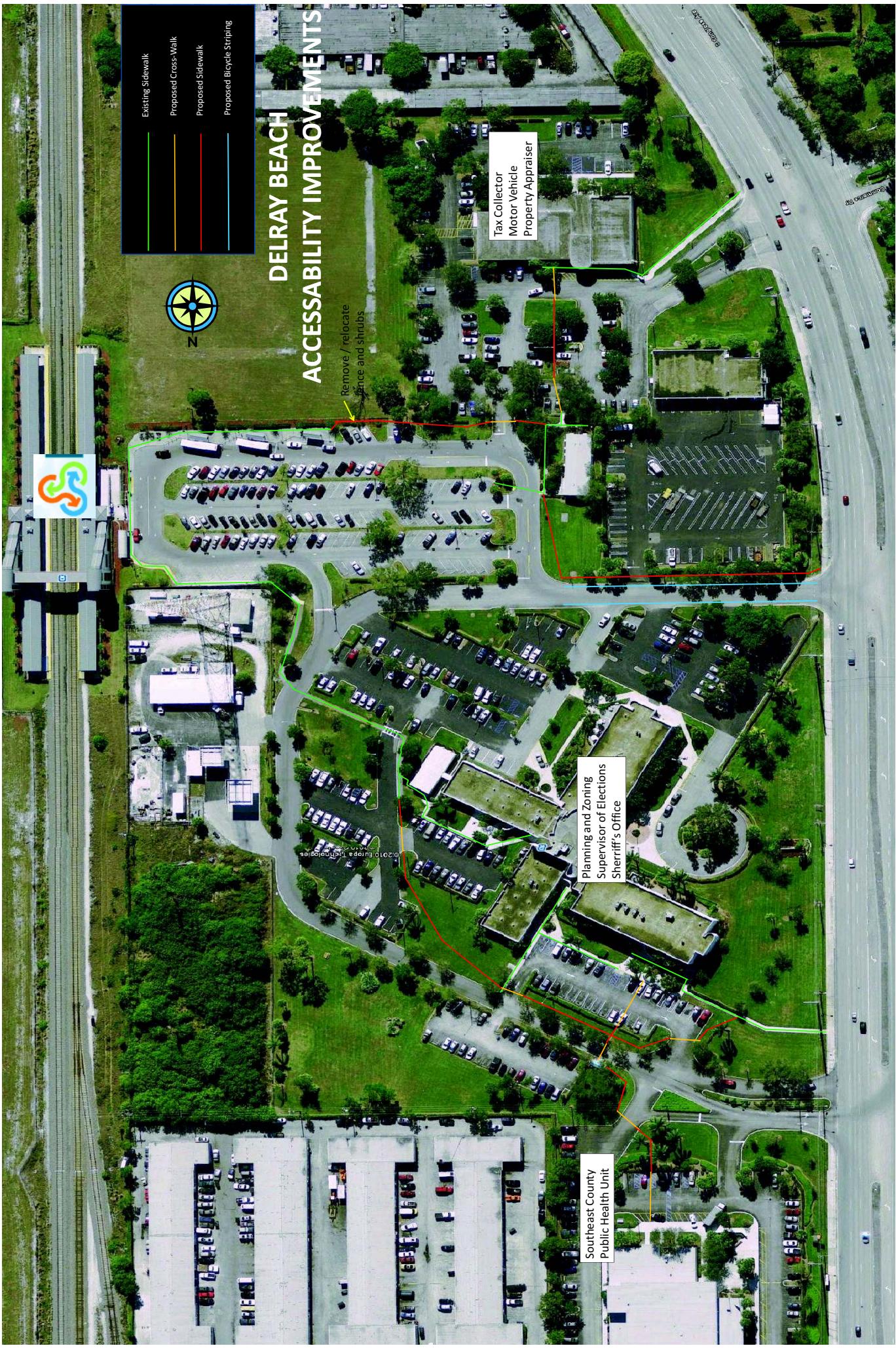
INF-4  
\$100



INF-5  
\$100

## Appendix B

### Delray Beach Tri-Rail Station Improvements



## Appendix C

### Gateway Boulevard Interchange Reconfiguration

Gateway Boulevard Reconfiguration  
4: Gateway Blvd & NB ramps

Timing Plan: AM Peak  
Existing Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑			↑↑↑↑	↑	↑↑		↑			
Volume (vph)	416	807	0	0	990	210	536	0	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		200	0		0	0	0	0
Storage Lanes	2		0	2		1	2		1	0	0	0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	3433	3539	0	0	6408	1583	3433	0	1583	0	0	0
Flt Permitted	0.950					0.950						
Satd. Flow (perm)	3433	3539	0	0	6408	1583	3433	0	1583	0	0	0
Right Turn on Red			Yes				Yes		Yes			Yes
Satd. Flow (RTOR)						228			130			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		240			558			518			420	
Travel Time (s)		5.5			12.7			11.8			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	452	877	0	0	1076	228	583	0	130	0	0	0
Turn Type		Prot				Perm	custom		custom			
Protected Phases	5	2			6							
Permitted Phases						6	8		8			
Total Split (s)	27.0	58.0	0.0	0.0	31.0	31.0	32.0	0.0	32.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	23.0	60.9			33.9	33.9	21.1			21.1		
Actuated g/C Ratio	0.26	0.68			0.38	0.38	0.23			0.23		
v/c Ratio	0.52	0.37			0.45	0.31	0.72			0.28		
Control Delay	26.9	5.6			22.5	4.4	36.8			6.3		
Queue Delay	1.9	1.1			0.0	0.0	0.0			0.0		
Total Delay	28.8	6.7			22.5	4.4	36.8			6.3		
LOS	C	A			C	A	D			A		
Approach Delay		14.2			19.3							
Approach LOS		B			B							

#### Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 48 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 19.8

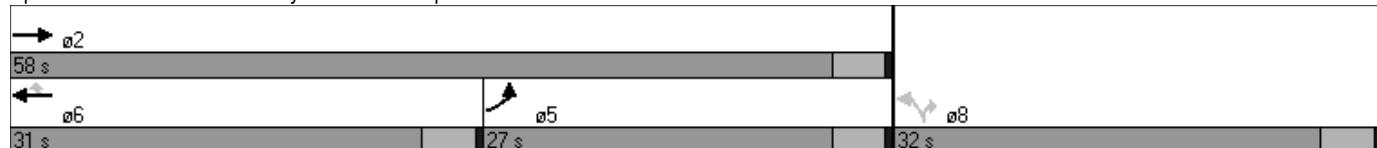
Intersection LOS: B

Intersection Capacity Utilization 110.5%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 4: Gateway Blvd & NB ramps



Gateway Boulevard Reconfiguration  
6: Gateway Blvd & SB ramps

Timing Plan: AM Peak  
Existing Conditions

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations			↑	↑↑	↑↑					↑↑		↑
Volume (vph)	0	938	1145	407	1184	0	0	0	0	181	0	423
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	390		0	0		0	0		0	0		0
Storage Lanes	2		1	2		0	0		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	6408	1583	3433	3539	0	0	0	0	3433	0	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	6408	1583	3433	3539	0	0	0	0	3433	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			528									*350
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		690			240			497			367	
Travel Time (s)		15.7			5.5			11.3			8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1020	1245	442	1287	0	0	0	0	197	0	460
Turn Type			Perm	Prot						Prot		Free
Protected Phases		2		1	6						4	
Permitted Phases		2										Free
Total Split (s)	0.0	59.0	59.0	16.0	75.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)		56.1	56.1	12.0	72.1					9.9		90.0
Actuated g/C Ratio	0.62	0.62	0.13	0.80						0.11		1.00
v/c Ratio	0.26	1.05	0.97	0.45						0.52		0.29
Control Delay		7.9	52.8	53.6	1.8					42.9		0.5
Queue Delay		0.0	0.0	0.0	0.2					0.0		0.0
Total Delay		7.9	52.8	53.6	2.0					42.9		0.5
LOS	A	D	D	A						D		A
Approach Delay		32.6			15.2							
Approach LOS		C			B							

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 88 (98%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 23.4

Intersection LOS: C

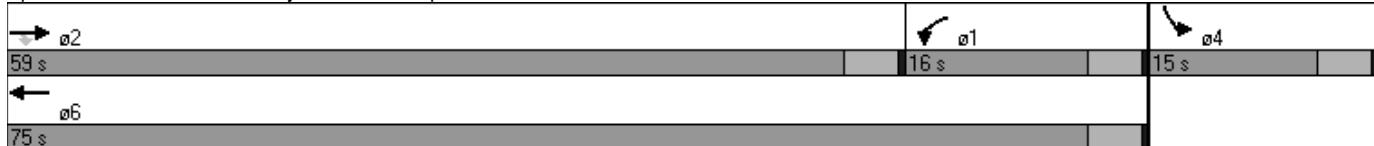
Intersection Capacity Utilization 110.5%

ICU Level of Service H

Analysis Period (min) 15

\* User Entered Value

Splits and Phases: 6: Gateway Blvd & SB ramps



Gateway Boulevard Reconfiguration  
4: Gateway Blvd & NB ramps

Existing Conditions  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑			↑↑↑↑	↑	↑↑		↑			
Volume (vph)	432	1001	0	0	967	140	1016	0	442	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		200	0		0	0	0	0
Storage Lanes	2		0	2		1	2		1	0	0	0
Taper Length (ft)	25		25	25		25	25		25	25	25	25
Satd. Flow (prot)	3433	3539	0	0	6408	1583	3433	0	1583	0	0	0
Flt Permitted	0.950					0.950						
Satd. Flow (perm)	3433	3539	0	0	6408	1583	3433	0	1583	0	0	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)						152				56		
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		240			558			518			420	
Travel Time (s)		5.5			12.7			11.8			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	470	1088	0	0	1051	152	1104	0	480	0	0	0
Turn Type		Prot				Perm	custom			custom		
Protected Phases	5	2			6							
Permitted Phases						6	8			8		
Total Split (s)	27.0	58.0	0.0	0.0	31.0	31.0	52.0	0.0	52.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	19.8	58.8			35.1	35.1	43.2			43.2		
Actuated g/C Ratio	0.18	0.53			0.32	0.32	0.39			0.39		
v/c Ratio	0.76	0.58			0.51	0.25	0.82			0.73		
Control Delay	70.0	12.3			33.0	6.4	35.3			31.8		
Queue Delay	28.5	1.4			0.0	0.0	0.0			0.0		
Total Delay	98.5	13.7			33.0	6.4	35.3			31.8		
LOS	F	B			C	A	D			C		
Approach Delay		39.3			29.6							
Approach LOS		D			C							

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 10 (9%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 34.8

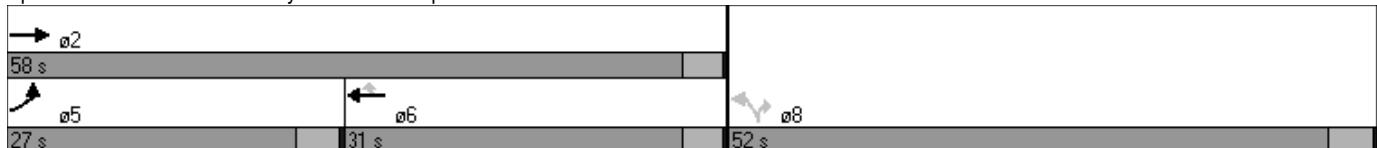
Intersection LOS: C

Intersection Capacity Utilization 90.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Gateway Blvd & NB ramps



Gateway Boulevard Reconfiguration  
6: Gateway Blvd & SB ramps

Existing Conditions  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											0	
Volume (vph)	0	1073	586	226	2538	0	0	0	0	234	0	567
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	390		0	0		0	0		0	0		0
Storage Lanes	2		1	2		0	0		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	6408	1583	3433	3539	0	0	0	0	3433	0	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	6408	1583	3433	3539	0	0	0	0	3433	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			537									*350
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		690			240			497			367	
Travel Time (s)		15.7			5.5			11.3			8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1166	637	246	2759	0	0	0	0	254	0	616
Turn Type			Perm	Prot						Prot		Free
Protected Phases		2		1	6						4	
Permitted Phases		2										Free
Total Split (s)	0.0	78.0	78.0	17.0	95.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)		74.2	74.2	13.0	91.2					10.8		110.0
Actuated g/C Ratio	0.67	0.67	0.12	0.83						0.10		1.00
v/c Ratio	0.27	0.51	0.61	0.94						0.76		0.39
Control Delay		7.3	2.9	58.1	9.4					63.3		0.7
Queue Delay		0.0	0.0	0.2	16.0					1.8		0.0
Total Delay		7.3	2.9	58.3	25.4					65.1		0.7
LOS	A	A	E	C						E		A
Approach Delay		5.8		28.1								
Approach LOS		A		C								

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 19.7

Intersection LOS: B

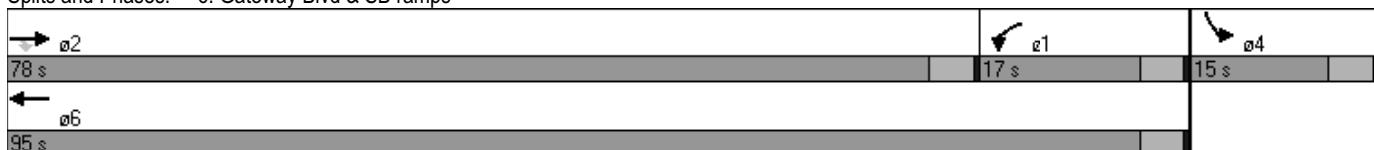
Intersection Capacity Utilization 90.1%

ICU Level of Service E

Analysis Period (min) 15

\* User Entered Value

Splits and Phases: 6: Gateway Blvd & SB ramps



Gateway Boulevard Reconfiguration  
4: Gateway Blvd & NB ramps

Modified Interchange (Eliminate WBL @ SB Ramps)  
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑			↑↑↑	↑	↑↑		↑			
Volume (vph)	416	807	0	0	990	210	536	0	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		200	0		0	0	0	0
Storage Lanes	2		0	2		1	2		1	0	0	0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	3433	3539	0	0	5085	1583	3433	0	1583	0	0	0
Flt Permitted	0.950					0.950						
Satd. Flow (perm)	3433	3539	0	0	5085	1583	3433	0	1583	0	0	0
Right Turn on Red			Yes				Yes		Yes			Yes
Satd. Flow (RTOR)						228			130			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		240			558			518			420	
Travel Time (s)		5.5			12.7			11.8			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	452	877	0	0	1076	228	583	0	130	0	0	0
Turn Type		Prot				Perm	custom		custom			
Protected Phases	5	2			6							
Permitted Phases						6	8		8			
Total Split (s)	22.0	54.0	0.0	0.0	32.0	32.0	26.0	0.0	26.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	15.3	53.3			34.0	34.0	18.7		18.7			
Actuated g/C Ratio	0.19	0.67			0.42	0.42	0.23		0.23			
v/c Ratio	0.69	0.37			0.50	0.28	0.73		0.28			
Control Delay	18.7	7.4			18.8	3.8	33.6		6.2			
Queue Delay	0.4	0.9			0.1	0.0	0.0		0.0			
Total Delay	19.0	8.3			18.9	3.8	33.6		6.2			
LOS	B	A			B	A	C		A			
Approach Delay		12.0			16.3							
Approach LOS		B			B							

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 24 (30%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 17.2

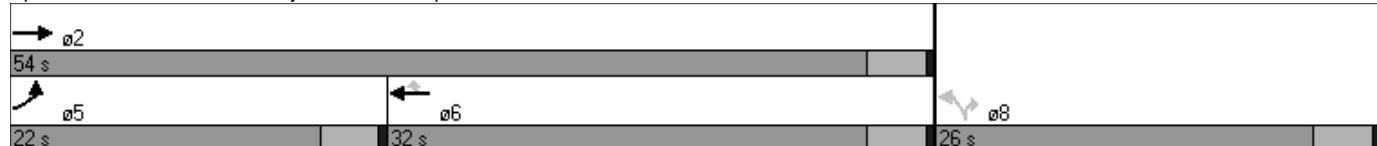
Intersection LOS: B

Intersection Capacity Utilization 58.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Gateway Blvd & NB ramps



Gateway Boulevard Reconfiguration  
6: Gateway Blvd & SB ramps

Modified Interchange (Eliminate WBL @ SB Ramps)  
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	938	1145	407	1184	0	0	0	0	181	0	423
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	390			0	0		0	0		0	0	0
Storage Lanes	2			1	1		0	0		0	2	1
Taper Length (ft)	25			25	25		25	25		25	25	25
Satd. Flow (prot)	0	6408	1583	1770	3539	0	0	0	0	3433	0	1583
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	6408	1583	1770	3539	0	0	0	0	3433	0	1583
Right Turn on Red				Yes			Yes			Yes		Yes
Satd. Flow (RTOR)				680								*350
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		690			240			497			367	
Travel Time (s)		15.7			5.5			11.3			8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1020	1245	442	1287	0	0	0	0	197	0	460
Turn Type				Free	Prot					Prot		Free
Protected Phases		2			1	6					4	
Permitted Phases				Free								Free
Total Split (s)	0.0	26.0	0.0	39.0	65.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	32.8	80.0	25.6	62.4						9.6		80.0
Actuated g/C Ratio	0.41	1.00	0.32	0.78						0.12		1.00
v/c Ratio	0.39	0.79	0.78	0.47						0.48		0.29
Control Delay	18.5	4.0	18.7	3.2						36.6		0.5
Queue Delay	0.0	0.0	0.3	0.4						0.0		0.0
Total Delay	18.5	4.0	19.1	3.6						36.6		0.5
LOS	B	A	B	A						D		A
Approach Delay	10.5			7.5								
Approach LOS	B			A								

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 72 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 9.5

Intersection LOS: A

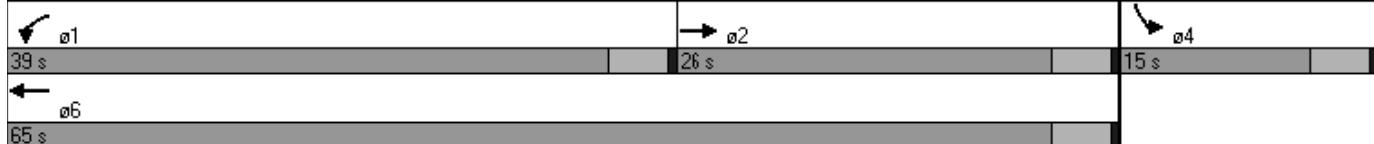
Intersection Capacity Utilization 58.0%

ICU Level of Service B

Analysis Period (min) 15

\* User Entered Value

Splits and Phases: 6: Gateway Blvd & SB ramps



Gateway Boulevard Reconfiguration  
4: Gateway Blvd & NB ramps

Modified Interchange (Eliminate WBL @ SB Ramps)  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑			↑↑↑	↑	↑↑		↑			
Volume (vph)	432	1001	0	0	967	140	1016	0	442	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	400		200	0		0	0	0	0
Storage Lanes	2		0	2		1	2		1	0	0	0
Taper Length (ft)	25		25	25		25	25		25	25	25	25
Satd. Flow (prot)	3433	3539	0	0	5085	1583	3433	0	1583	0	0	0
Flt Permitted	0.950					0.950						
Satd. Flow (perm)	3433	3539	0	0	5085	1583	3433	0	1583	0	0	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)						152				63		
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		240			558			518			420	
Travel Time (s)		5.5			12.7			11.8			9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	470	1088	0	0	1051	152	1104	0	480	0	0	0
Turn Type		Prot				Perm	custom			custom		
Protected Phases	5	2			6							
Permitted Phases						6	8			8		
Total Split (s)	23.0	55.0	0.0	0.0	32.0	32.0	45.0	0.0	45.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	17.5	53.7			32.1	32.1	38.3			38.3		
Actuated g/C Ratio	0.18	0.54			0.32	0.32	0.38			0.38		
v/c Ratio	0.78	0.57			0.64	0.25	0.84			0.74		
Control Delay	71.5	9.0			32.2	5.8	34.5			30.5		
Queue Delay	39.4	0.6			0.0	0.0	0.0			0.0		
Total Delay	110.8	9.7			32.2	5.8	34.5			30.5		
LOS	F	A			C	A	C			C		
Approach Delay		40.2			28.9							
Approach LOS		D			C							

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 6 (6%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 34.5

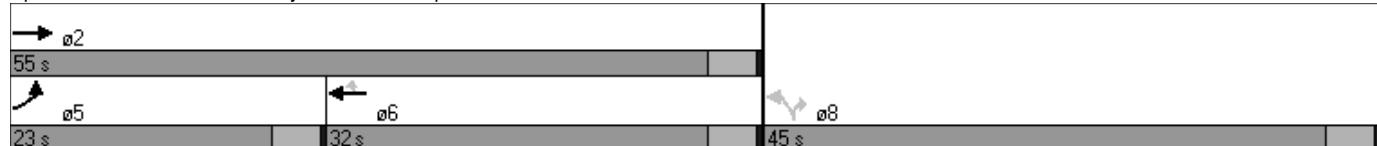
Intersection LOS: C

Intersection Capacity Utilization 74.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Gateway Blvd & NB ramps



Gateway Boulevard Reconfiguration  
6: Gateway Blvd & SB ramps

Modified Interchange (Eliminate WBL @ SB Ramps)  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1073	586	226	2538	0	0	0	0	234	0	567
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	390			0	0		0	0		0	0	0
Storage Lanes	2			1	1		0	0		0	2	1
Taper Length (ft)	25			25	25		25	25		25	25	25
Satd. Flow (prot)	0	6408	1583	1770	3539	0	0	0	0	3433	0	1583
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	6408	1583	1770	3539	0	0	0	0	3433	0	1583
Right Turn on Red			Yes			Yes				Yes		Yes
Satd. Flow (RTOR)			637									*350
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		690			240			497			367	
Travel Time (s)		15.7			5.5			11.3			8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1166	637	246	2759	0	0	0	0	254	0	616
Turn Type			Free	Prot						Prot		Free
Protected Phases		2		1	6						4	
Permitted Phases			Free									Free
Total Split (s)	0.0	58.0	0.0	27.0	85.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	54.4	100.0	23.0	81.4						10.6		100.0
Actuated g/C Ratio	0.54	1.00	0.23	0.81						0.11		1.00
v/c Ratio	0.33	0.40	0.60	0.96						0.69		0.39
Control Delay	13.1	0.8	43.9	10.6						53.7		0.7
Queue Delay	0.0	0.0	50.7	18.8						0.0		0.0
Total Delay	13.1	0.8	94.7	29.4						53.7		0.7
LOS	B	A	F	C						D		A
Approach Delay	8.8			34.8								
Approach LOS		A		C								

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 23.7

Intersection LOS: C

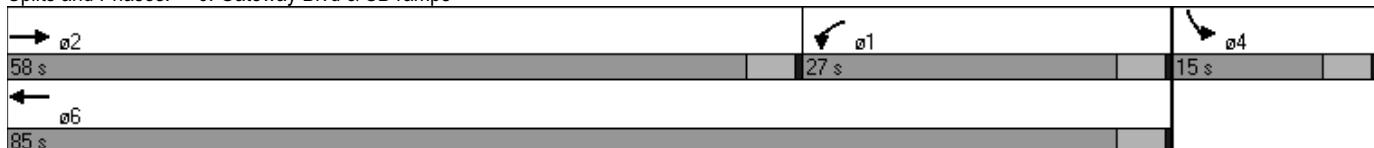
Intersection Capacity Utilization 74.1%

ICU Level of Service D

Analysis Period (min) 15

\* User Entered Value

Splits and Phases: 6: Gateway Blvd & SB ramps



## Appendix D

### Proposed Tamarind Avenue / Parker Avenue Reconfiguration

Tamaranind Avenue Reconfiguration  
3: Okeechobee Blvd & Tamarind

Existing Conditions  
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑↑		↑	↑↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑↑↑
Volume (vph)	621	1951	116	44	417	20	95	542	227	10	132	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	370			0	300		500	300		420	275	375
Storage Lanes	1			0	1		1	1		2	1	2
Taper Length (ft)	25			25	25		25	25		25	25	25
Satd. Flow (prot)	1770	5045	0	1770	5085	1583	1770	5085	1583	1770	3539	2787
Flt Permitted	0.950				0.950		0.950			0.950		
Satd. Flow (perm)	1770	5045	0	1770	5085	1583	1770	5085	1583	1770	3539	2787
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		12					22			203		267
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2160			1300			517			656	
Travel Time (s)		49.1			29.5			11.8			14.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	675	2247	0	48	453	22	103	589	247	11	143	267
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			6
Total Split (s)	61.0	69.0	0.0	13.0	21.0	21.0	16.0	26.0	26.0	12.0	22.0	22.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	56.0	64.0		8.0	16.0	16.0	11.0	21.0	21.0	7.0	17.0	17.0
Actuated g/C Ratio	0.47	0.53		0.07	0.13	0.13	0.09	0.18	0.18	0.06	0.14	0.14
v/c Ratio	0.82	0.83		0.41	0.67	0.10	0.64	0.66	0.56	0.11	0.29	0.43
Control Delay	37.3	26.9		64.5	54.9	18.2	70.8	50.3	15.3	57.8	48.5	15.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	26.9		64.5	54.9	18.2	70.8	50.3	15.3	57.8	48.5	15.6
LOS	D	C		E	D	B	E	D	B	E	D	B
Approach Delay		29.3			54.2			43.3			27.9	
Approach LOS		C			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 34.6

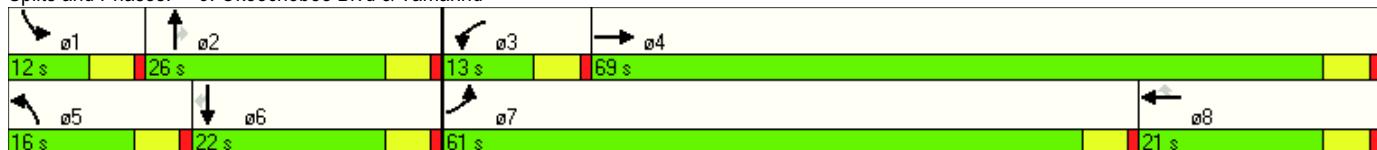
Intersection LOS: C

Intersection Capacity Utilization 74.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Okeechobee Blvd & Tamarind



# Tamaranind Avenue Reconfiguration

## 6: Fern Street & Tamarind

Existing Conditions

Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	10	20	20	20	0	800	400	70	350	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0		0			0	140		0
Storage Lanes	0			0		1	0		0	1		0
Taper Length (ft)	25			25		25			25	25		25
Satd. Flow (prot)	0	1750	0	0	1818	1583	0	3362	0	1770	3539	0
Flt Permitted						0.825					0.199	
Satd. Flow (perm)	0	1551	0	0	1537	1583	0	3362	0	371	3539	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		11				22			214			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		301			676			1010			1374	
Travel Time (s)		6.8			15.4			23.0			31.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	0	44	22	0	1305	0	76	380	0
Turn Type		Perm			Perm		Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8				6		
Total Split (s)	24.0	24.0	0.0	24.0	24.0	24.0	0.0	96.0	0.0	96.0	96.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)		8.7			8.7	8.7		104.4		104.4	104.4	
Actuated g/C Ratio		0.07			0.07	0.07		0.87		0.87	0.87	
v/c Ratio		0.27			0.39	0.16		0.44		0.24	0.12	
Control Delay		43.5			62.5	21.6		3.7		4.5	2.0	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		43.5			62.5	21.6		3.7		4.5	2.0	
LOS	D			E	C		A		A	A		
Approach Delay	43.5			48.9			3.7			2.4		
Approach LOS	D			D			A			A		

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 5.7

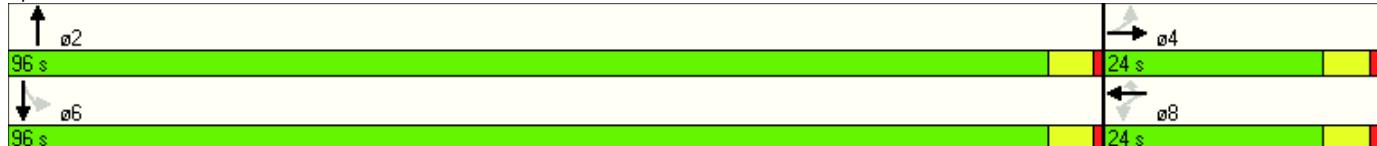
Intersection LOS: A

Intersection Capacity Utilization 59.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 6: Fern Street & Tamarind



Tamaranind Avenue Reconfiguration  
9: Banyan & Tamarind

Existing Conditions  
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑↑				
Volume (vph)	86	1045	172	65	256	18	108	187	287	21	182	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		0	160		0	0		370
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1770	3465	0	1770	3504	0	1770	3217	0	0	3433	0
Flt Permitted	0.564			0.098			0.414				0.875	
Satd. Flow (perm)	1051	3465	0	183	3504	0	771	3217	0	0	3016	0
Right Turn on Red		Yes				Yes			Yes			Yes
Satd. Flow (RTOR)		22			9			161			19	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1352			901			1374			1914	
Travel Time (s)		30.7			20.5			31.2			43.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	93	1323	0	71	298	0	117	515	0	0	268	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	12.0	66.0	0.0	12.0	66.0	0.0	14.0	42.0	0.0	28.0	28.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	68.0	61.0		68.0	61.0		37.0	37.0			23.0	
Actuated g/C Ratio	0.57	0.51		0.57	0.51		0.31	0.31			0.19	
v/c Ratio	0.15	0.75		0.36	0.17		0.37	0.47			0.45	
Control Delay	10.5	26.2		15.1	15.6		32.2	23.2			42.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	10.5	26.2		15.1	15.6		32.2	23.2			42.6	
LOS	B	C		B	B		C	C			D	
Approach Delay		25.2			15.5			24.9			42.6	
Approach LOS		C			B			C			D	

#### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 25.5

Intersection LOS: C

Intersection Capacity Utilization 78.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 9: Banyan & Tamarind



Tamaranind Avenue Reconfiguration  
13: Old Okeechobee & Parker

Existing Conditions  
Timing Plan: AM Peak

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	20	20	50	844	250	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1694	0	0	3529	3539	1583
Flt Permitted	0.976			0.997		
Satd. Flow (perm)	1694	0	0	3529	3539	1583
Link Speed (mph)	30			30	30	
Link Distance (ft)	448			673	517	
Travel Time (s)	10.2			15.3	11.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	0	971	272	46
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.0%					
Analysis Period (min)	15					
ICU Level of Service A						

Tamaranind Avenue Reconfiguration  
3: Okeechobee Blvd & Tamarind

Existing Conditions  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑↑		↑	↑↑↑	↑	↑	↑↑↑	↑	↑	↑↑	↑↑
Volume (vph)	298	1397	161	133	1924	50	144	214	100	25	385	869
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	370			0	300		500		300		420	275
Storage Lanes	1			0	1		1		1		2	1
Taper Length (ft)	25			25	25		25		25		25	25
Satd. Flow (prot)	1770	5009	0	1770	5588	1583	1770	5085	1583	1770	3539	2787
Flt Permitted	0.950				0.950			0.950			0.950	
Satd. Flow (perm)	1770	5009	0	1770	5588	1583	1770	5085	1583	1770	3539	2787
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		20					53			105		29
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2160			1300			517			656	
Travel Time (s)		49.1			29.5			11.8			14.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	314	1640	0	140	2025	53	152	225	105	26	405	915
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		pt+ov
Protected Phases	7	4		3	8		5	2		1	6	6 7
Permitted Phases						8				2		
Total Split (s)	29.0	55.0	0.0	27.0	53.0	53.0	16.0	26.0	26.0	12.0	22.0	51.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	24.0	50.0		22.0	48.0	48.0	11.0	21.0	21.0	7.0	17.0	46.0
Actuated g/C Ratio	0.20	0.42		0.18	0.40	0.40	0.09	0.18	0.18	0.06	0.14	0.38
v/c Ratio	0.89	0.78		0.43	0.91	0.08	0.94	0.25	0.29	0.25	0.81	0.84
Control Delay	73.7	33.1		48.2	40.9	6.3	114.0	43.8	10.8	55.8	65.7	42.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	33.1		48.2	40.9	6.3	114.0	43.8	10.8	55.8	65.7	42.3
LOS	E	C		D	D	A	F	D	B	E	E	D
Approach Delay		39.7			40.5			58.7			49.6	
Approach LOS		D			D			E			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 43.7

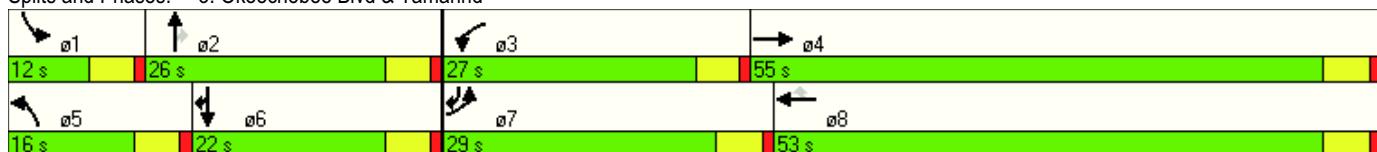
Intersection LOS: D

Intersection Capacity Utilization 89.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Okeechobee Blvd & Tamarind



Tamaranind Avenue Reconfiguration  
6: Fern Street & Tamarind

Existing Conditions  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	10	700	0	20	0	500	50	20	600	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0		0		0		0	140	0
Storage Lanes	0			0		1	0		0	1	0	
Taper Length (ft)	25			25		25		25		25	25	25
Satd. Flow (prot)	0	1750	0	0	1770	1583	0	3490	0	1770	3539	0
Flt Permitted						0.736					0.229	
Satd. Flow (perm)	0	1484	0	0	1371	1583	0	3490	0	427	3539	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		11				21				8		
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		301			676			1010			1374	
Travel Time (s)		6.8			15.4			23.0			31.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	0	737	21	0	579	0	21	632	0
Turn Type	Perm			pm+pt		Perm				Perm		
Protected Phases		4			3	8			2			6
Permitted Phases		4			8		8				6	
Total Split (s)	30.0	30.0	0.0	59.0	89.0	89.0	0.0	31.0	0.0	31.0	31.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	4.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)		81.2			81.2	81.2		28.8		28.8	28.8	
Actuated g/C Ratio		0.68			0.68	0.68		0.24		0.24	0.24	
v/c Ratio		0.03			0.79	0.02		0.69		0.20	0.74	
Control Delay		4.2			20.9	2.1		72.0		54.7	59.4	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		4.2			20.9	2.1		72.0		54.7	59.4	
LOS	A				C	A		E		D	E	
Approach Delay		4.2			20.3			72.0			59.3	
Approach LOS		A			C			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 47.4

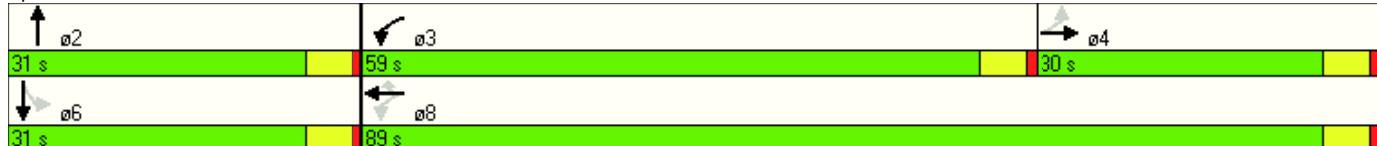
Intersection LOS: D

Intersection Capacity Utilization 70.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Fern Street & Tamarind



Tamaranind Avenue Reconfiguration  
9: Banyan & Tamarind

Existing Conditions  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓		↑	↑↓				
Volume (vph)	43	286	132	182	1010	11	150	254	52	4	217	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		0	160		0	0		370
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1770	3373	0	1770	3532	0	1770	3447	0	0	3384	0
Flt Permitted	0.120			0.371			0.430				0.951	
Satd. Flow (perm)	224	3373	0	691	3532	0	801	3447	0	0	3221	0
Right Turn on Red		Yes				Yes			Yes			Yes
Satd. Flow (RTOR)		68				1						51
Link Speed (mph)		30				30						30
Link Distance (ft)		1352				901						1914
Travel Time (s)		30.7				20.5						43.5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	440	0	192	1075	0	158	322	0	0	326	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2				6
Permitted Phases	4			8			2					6
Total Split (s)	12.0	46.0	0.0	18.0	52.0	0.0	16.0	56.0	0.0	40.0	40.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	48.0	41.0		59.0	47.0		51.0	51.0				35.0
Actuated g/C Ratio	0.40	0.34		0.49	0.39		0.42	0.42				0.29
v/c Ratio	0.25	0.37		0.42	0.78		0.37	0.22				0.33
Control Delay	20.1	25.9		20.5	36.6		51.1	43.8				29.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	20.1	25.9		20.5	36.6		51.1	43.8				29.0
LOS	C	C		C	D		D	D				C
Approach Delay		25.4			34.2			46.2			29.0	
Approach LOS		C			C			D			C	

#### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 34.1

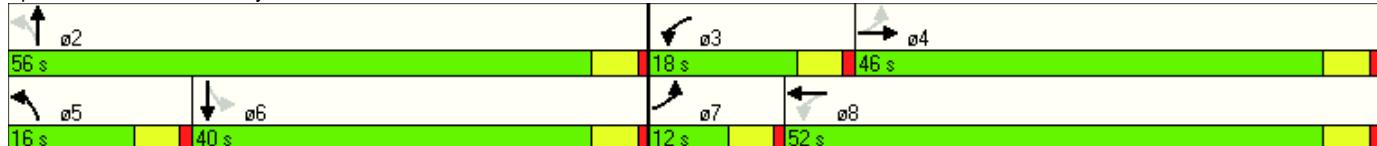
Intersection LOS: C

Intersection Capacity Utilization 68.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Banyan & Tamarind



Tamaranind Avenue Reconfiguration  
13: Old Okeechobee & Parker

Existing Conditions  
Timing Plan: PM Peak

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	75	20	380	650	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1694	0	0	3532	3539	1583
Flt Permitted	0.976			0.998		
Satd. Flow (perm)	1694	0	0	3532	3539	1583
Link Speed (mph)	30			30	30	
Link Distance (ft)	448			2303	517	
Travel Time (s)	10.2			52.3	11.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	0	0	421	684	32
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	40.8%					
Analysis Period (min)	15					
ICU Level of Service A						

# Tamaranind Avenue Reconfiguration

## 15: Belvedere & Parker

Existing Conditions

Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓			↑↓			↑↓	
Volume (vph)	102	658	173	37	951	62	156	137	40	116	404	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	480		0	180		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1770	3429	0	1770	3507	0	0	3396	0	0	3399	0
Flt Permitted	0.098			0.232				0.534			0.762	
Satd. Flow (perm)	183	3429	0	432	3507	0	0	1856	0	0	2613	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			6			14			31	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		677			1437			992			2303	
Travel Time (s)		15.4			32.7			22.5			52.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	875	0	39	1066	0	0	350	0	0	687	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	17.0	57.0	0.0	12.0	52.0	0.0	51.0	51.0	0.0	51.0	51.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	64.0	52.0		54.0	47.0			46.0			46.0	
Actuated g/C Ratio	0.53	0.43		0.45	0.39			0.38			0.38	
v/c Ratio	0.42	0.58		0.14	0.77			0.49			0.67	
Control Delay	19.1	26.5		13.7	30.7			29.6			45.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	19.1	26.5		13.7	30.7			29.6			45.7	
LOS	B	C		B	C			C			D	
Approach Delay		25.7			30.1			29.6			45.7	
Approach LOS		C			C			C			D	

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 32.1

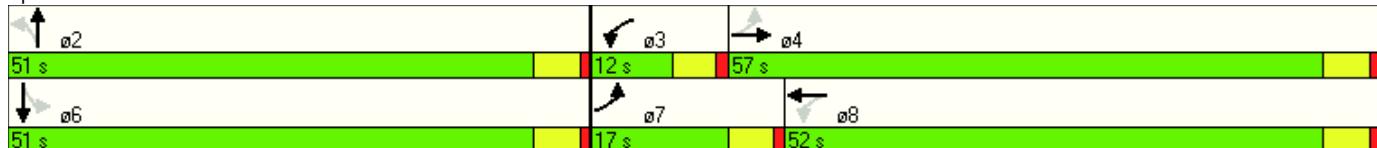
Intersection LOS: C

Intersection Capacity Utilization 79.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 15: Belvedere & Parker



## Tamaranind Avenue Reconfiguration

## 18: Belvedere &amp; Lake

Existing Conditions

Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	930	61	29	607	24	102	27	20	16	36	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	3504	0	0	3514	0	1770	1744	0	1770	1764	0
Flt Permitted		0.936			0.862		0.719			0.725		
Satd. Flow (perm)	0	3283	0	0	3036	0	1339	1744	0	1350	1764	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			6			21			21	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1437			1906			634			830	
Travel Time (s)		32.7			43.3			14.4			18.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1061	0	0	695	0	107	49	0	17	59	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	84.0	84.0	0.0	84.0	84.0	0.0	36.0	36.0	0.0	36.0	36.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	79.0			79.0			31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.66			0.66			0.26	0.26		0.26	0.26	
v/c Ratio	0.49			0.35			0.31	0.11		0.05	0.13	
Control Delay	7.2			9.6			38.9	22.9		34.1	24.5	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	7.2			9.6			38.9	22.9		34.1	24.5	
LOS	A			A			D	C		C	C	
Approach Delay	7.2			9.6				33.9			26.7	
Approach LOS	A			A				C			C	

## Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 23 (19%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 10.9

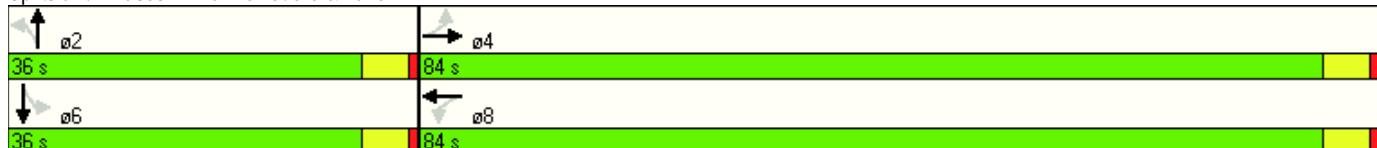
Intersection LOS: B

Intersection Capacity Utilization 60.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 18: Belvedere &amp; Lake



Tamarind Avenue Reconfiguration  
3: Okeechobee Blvd & Tamarind

Proposed Scenario - Remove 1 lane on Tamarind/Parker  
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑↑		↑	↑↑↑	↑	↑	↑↑	↑	↑	↑↑	↑↑
Volume (vph)	621	1951	116	44	417	20	95	542	227	10	132	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	370			0	300		500	300		420	275	375
Storage Lanes	1			0	1		1	1		1	1	2
Taper Length (ft)	25			25	25		25	25		25	25	25
Satd. Flow (prot)	1593	4540	0	1593	4577	1425	1593	3185	1425	1593	3185	2508
Flt Permitted	0.950			0.950		0.950		0.950		0.950		0.950
Satd. Flow (perm)	1593	4540	0	1593	4577	1425	1593	3185	1425	1593	3185	2508
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		12				22				203		267
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2160			1300			517			656	
Travel Time (s)		49.1			29.5			11.8			14.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	675	2247	0	48	453	22	103	589	247	11	143	267
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			6
Total Split (s)	61.0	69.0	0.0	13.0	21.0	21.0	16.0	26.0	26.0	12.0	22.0	22.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	56.0	64.0		8.0	16.0	16.0	11.0	21.0	21.0	7.0	17.0	17.0
Actuated g/C Ratio	0.47	0.53		0.07	0.13	0.13	0.09	0.18	0.18	0.06	0.14	0.14
v/c Ratio	0.91	0.93		0.45	0.74	0.11	0.71	1.06	0.59	0.12	0.32	0.46
Control Delay	47.6	33.7		68.0	58.3	18.5	78.6	101.7	16.6	56.1	48.3	15.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	33.7		68.0	58.3	18.5	78.6	101.7	16.6	56.1	48.3	15.0
LOS	D	C		E	E	B	E	F	B	E	D	B
Approach Delay		36.9			57.5			76.8			27.3	
Approach LOS		D			E			E			C	

Intersection Summary

Area Type: CBD

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 46.1

Intersection LOS: D

Intersection Capacity Utilization 84.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Okeechobee Blvd & Tamarind



Tamarind Avenue Reconfiguration  
6: Fern Street & Tamarind

Proposed Scenario - Remove 1 lane on Tamarind/Parker  
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	10	20	20	20	5	800	400	70	350	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	140		0
Storage Lanes	0		0	0		1	0		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	1750	0	0	1818	1583	0	3362	0	1770	1859	0
Flt Permitted						0.825		0.954		0.198		
Satd. Flow (perm)	0	1551	0	0	1537	1583	0	3208	0	369	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				22			213			2
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		301			676			1010			1374	
Travel Time (s)		6.8			15.4			23.0			31.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	0	44	22	0	1310	0	76	385	0
Turn Type		Perm			Perm		Perm	Perm			Perm	
Protected Phases		4			8			2			6	
Permitted Phases	4		8		8	2				6		
Total Split (s)	24.0	24.0	0.0	24.0	24.0	24.0	96.0	96.0	0.0	96.0	96.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)		8.7			8.7	8.7		104.4		104.4	104.4	
Actuated g/C Ratio		0.07			0.07	0.07		0.87		0.87	0.87	
v/c Ratio		0.27			0.39	0.16		0.46		0.24	0.24	
Control Delay		43.5			62.5	21.6		2.9		4.0	2.5	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		43.5			62.5	21.6		2.9		4.0	2.5	
LOS	D		E	C		A		A		A		
Approach Delay	43.5		48.9			2.9				2.7		
Approach LOS	D		D			A				A		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 5.2

Intersection LOS: A

Intersection Capacity Utilization 74.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Fern Street & Tamarind



Tamarind Avenue Reconfiguration  
9: Banyan & Tamarind

Proposed Scenario - Remove 1 lane on Tamarind/Parker  
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑↑			↔	
Volume (vph)	86	1045	172	65	256	18	108	187	287	21	182	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		0	160		0	0		370
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1770	3465	0	1770	3504	0	1770	3217	0	0	1811	0
Flt Permitted	0.562			0.090			0.286				0.923	
Satd. Flow (perm)	1047	3465	0	168	3504	0	533	3217	0	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			9			160			8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1352			901			1374			1914	
Travel Time (s)		30.7			20.5			31.2			43.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	93	1323	0	71	298	0	117	515	0	0	268	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	12.0	64.0	0.0	12.0	64.0	0.0	14.0	44.0	0.0	30.0	30.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	66.0	59.0		66.0	59.0		39.0	39.0			25.0	
Actuated g/C Ratio	0.55	0.49		0.55	0.49		0.32	0.32			0.21	
v/c Ratio	0.15	0.77		0.38	0.17		0.44	0.45			0.75	
Control Delay	11.3	28.4		16.7	16.7		32.7	22.1			57.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	11.3	28.4		16.7	16.7		32.7	22.1			57.7	
LOS	B	C		B	B		C	C			E	
Approach Delay		27.2			16.7			24.1			57.7	
Approach LOS		C			B			C			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 28.1

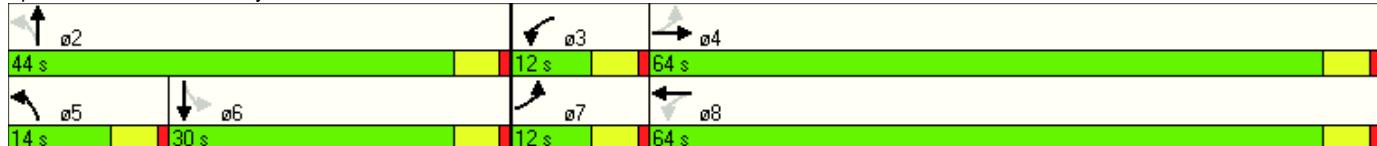
Intersection LOS: C

Intersection Capacity Utilization 84.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 9: Banyan & Tamarind



Tamarind Avenue Reconfiguration  
13: Old Okeechobee & Parker

Proposed Scenario - Remove 1 lane on Tamarind/Parker  
Timing Plan: AM Peak

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	20	20	50	844	250	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1694	0	0	3529	1863	1583
Flt Permitted	0.976			0.997		
Satd. Flow (perm)	1694	0	0	3529	1863	1583
Link Speed (mph)	30			30	30	
Link Distance (ft)	448			673	517	
Travel Time (s)	10.2			15.3	11.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	0	971	272	46
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	51.3%					
Analysis Period (min)	15					
ICU Level of Service A						

Tamarind Avenue Reconfiguration  
3: Okeechobee Blvd & Tamarind

Proposed Conditions - Remove 1 lane on Tamarind/Parker  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑↑		↑	↑↑↑	↑	↑	↑↑	↑	↑	↑↑	↑↑
Volume (vph)	298	1397	161	133	1924	50	144	214	100	25	385	869
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	370			0	300		500	300		420	275	375
Storage Lanes	1			0	1		1	1		1	1	2
Taper Length (ft)	25			25	25		25	25		25	25	25
Satd. Flow (prot)	1770	5009	0	1770	5588	1583	1770	3539	1583	1770	3539	2787
Flt Permitted	0.950				0.950		0.950		0.950		0.950	
Satd. Flow (perm)	1770	5009	0	1770	5588	1583	1770	3539	1583	1770	3539	2787
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		20					53			105		29
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2160			1300			517			656	
Travel Time (s)		49.1			29.5			11.8			14.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	314	1640	0	140	2025	53	152	225	105	26	405	915
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		pt+ov
Protected Phases	7	4		3	8		5	2		1	6	6 7
Permitted Phases						8				2		
Total Split (s)	29.0	55.0	0.0	27.0	53.0	53.0	16.0	26.0	26.0	12.0	22.0	51.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	24.0	50.0		22.0	48.0	48.0	11.0	21.0	21.0	7.0	17.0	46.0
Actuated g/C Ratio	0.20	0.42		0.18	0.40	0.40	0.09	0.18	0.18	0.06	0.14	0.38
v/c Ratio	0.89	0.78		0.43	0.91	0.08	0.94	0.36	0.29	0.25	0.81	0.84
Control Delay	73.7	33.1		48.2	40.9	6.3	114.0	45.8	10.8	53.6	60.5	35.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	33.1		48.2	40.9	6.3	114.0	45.8	10.8	53.6	60.5	35.7
LOS	E	C		D	D	A	F	D	B	D	E	D
Approach Delay		39.7			40.5			59.7			43.5	
Approach LOS		D			D			E			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 42.5

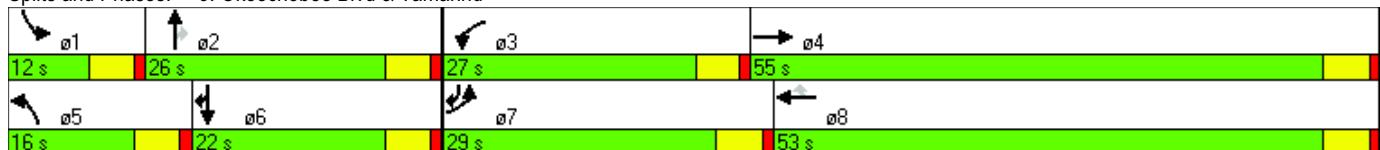
Intersection LOS: D

Intersection Capacity Utilization 89.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Okeechobee Blvd & Tamarind



Tamarind Avenue Reconfiguration  
6: Fern Street & Tamarind

Proposed Conditions - Remove 1 lane on Tamarind/Parker

Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	10	700	0	20	0	500	50	20	600	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0		0			0	140		0
Storage Lanes	0			0	1		1	0		0	1	0
Taper Length (ft)	25			25	25		25	25		25	25	25
Satd. Flow (prot)	0	1750	0	1770	0	1583	0	3490	0	1770	1863	0
Flt Permitted					0.624					0.343		
Satd. Flow (perm)	0	1750	0	1162	0	1583	0	3490	0	639	1863	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		11				21			8			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		301			676			1010			1374	
Travel Time (s)		6.8			15.4			23.0			31.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	737	0	21	0	579	0	21	632	0
Turn Type	Perm			custom		custom				Perm		
Protected Phases		4		3				2			6	
Permitted Phases		4		8		8				6		
Total Split (s)	30.0	30.0	0.0	59.0	0.0	89.0	0.0	31.0	0.0	31.0	31.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	7.2			61.0		61.0		49.0		49.0	49.0	
Actuated g/C Ratio	0.06			0.51		0.51		0.41		0.41	0.41	
v/c Ratio	0.29			0.86		0.03		0.40		0.08	0.83	
Control Delay	45.7			35.2		4.5		49.4		33.7	53.5	
Queue Delay	0.0			0.0		0.0		0.0		0.0	0.0	
Total Delay	45.7			35.2		4.5		49.4		33.7	53.5	
LOS	D			D		A		D		C	D	
Approach Delay	45.7							49.4			52.9	
Approach LOS	D							D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 44.8

Intersection LOS: D

Intersection Capacity Utilization 84.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Fern Street & Tamarind



Tamarind Avenue Reconfiguration  
9: Banyan & Tamarind

Proposed Conditions - Remove 1 lane on Tamarind/Parker  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓		↑	↑↓				
Volume (vph)	43	286	132	182	1010	11	150	254	52	4	217	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		0	160		0	0		370
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1770	3373	0	1770	3532	0	1770	3447	0	0	1788	0
Flt Permitted	0.120			0.371			0.319				0.996	
Satd. Flow (perm)	224	3373	0	691	3532	0	594	3447	0	0	1783	0
Right Turn on Red		Yes				Yes			Yes			Yes
Satd. Flow (RTOR)		68				1			25			17
Link Speed (mph)		30				30			30			30
Link Distance (ft)		1352				901			1374			1914
Travel Time (s)		30.7				20.5			31.2			43.5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	440	0	192	1075	0	158	322	0	0	326	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2				6
Permitted Phases	4			8			2					6
Total Split (s)	12.0	46.0	0.0	18.0	52.0	0.0	16.0	56.0	0.0	40.0	40.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	48.0	41.0		59.0	47.0		51.0	51.0				35.0
Actuated g/C Ratio	0.40	0.34		0.49	0.39		0.42	0.42				0.29
v/c Ratio	0.25	0.37		0.42	0.78		0.44	0.22				0.61
Control Delay	20.1	25.9		20.5	36.6		31.3	5.6				40.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	20.1	25.9		20.5	36.6		31.3	5.6				40.5
LOS	C	C		C	D		C	A				D
Approach Delay		25.4			34.2			14.0				40.5
Approach LOS		C			C			B				D

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 29.5

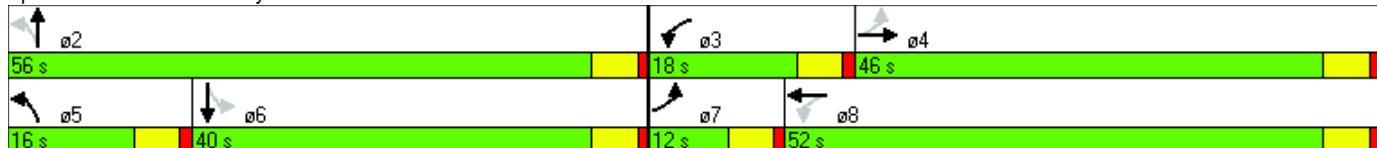
Intersection LOS: C

Intersection Capacity Utilization 76.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 9: Banyan & Tamarind



Tamarind Avenue Reconfiguration  
13: Old Okeechobee & Parker

Proposed Conditions - Remove 1 lane on Tamarind/Parker  
Timing Plan: PM Peak

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	75	20	380	650	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1694	0	0	3532	1863	1583
Flt Permitted	0.976			0.998		
Satd. Flow (perm)	1694	0	0	3532	1863	1583
Link Speed (mph)	30			30	30	
Link Distance (ft)	448			2303	517	
Travel Time (s)	10.2			52.3	11.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	0	0	421	684	32
Sign Control	Stop			Free	Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 49.6%	ICU Level of Service A					
Analysis Period (min) 15						

Tamarind Avenue Reconfiguration  
15: Belvedere & Parker

Proposed Conditions - Remove 1 lane on Tamarind/Parker  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓			↑↓			↑↓	
Volume (vph)	102	658	173	37	951	62	156	137	40	116	404	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	480			0	180		0	0		0		1000
Storage Lanes	1			0	1		0	0		0		1
Taper Length (ft)	25			25	25		25	25		25		25
Satd. Flow (prot)	1770	3429	0	1770	3507	0	0	3396	0	0	3399	0
Flt Permitted	0.098				0.232			0.534			0.762	
Satd. Flow (perm)	183	3429	0	432	3507	0	0	1856	0	0	2613	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			6			14			31	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		677			1437			992			2303	
Travel Time (s)		15.4			32.7			22.5			52.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	875	0	39	1066	0	0	350	0	0	687	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8				2			6
Permitted Phases		4			8			2			6	
Total Split (s)	17.0	57.0	0.0	12.0	52.0	0.0	51.0	51.0	0.0	51.0	51.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	64.0	52.0		54.0	47.0			46.0			46.0	
Actuated g/C Ratio	0.53	0.43		0.45	0.39			0.38			0.38	
v/c Ratio	0.42	0.58		0.14	0.77			0.49			0.67	
Control Delay	19.1	26.5		13.6	30.5			29.6			45.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	19.1	26.5		13.6	30.5			29.6			45.7	
LOS	B	C		B	C			C			D	
Approach Delay		25.7			29.9			29.6			45.7	
Approach LOS		C			C			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

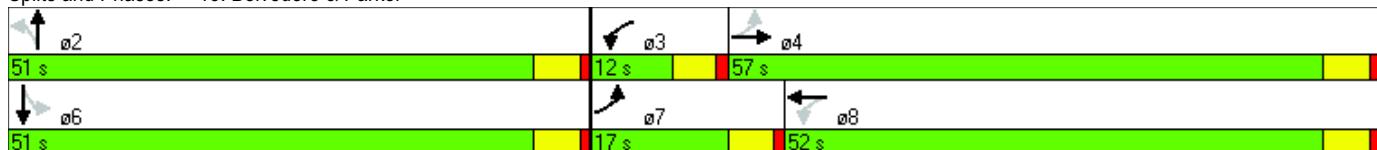
Maximum v/c Ratio: 0.77

Intersection Signal Delay: 32.0 Intersection LOS: C

Intersection Capacity Utilization 79.0% ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 15: Belvedere & Parker



Tamarind Avenue Reconfiguration  
18: Belvedere & Lake

Proposed Conditions - Remove 1 lane on Tamarind/Parker  
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	930	61	29	607	24	102	27	20	16	36	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	3504	0	0	3514	0	1770	1744	0	0	1774	0
Flt Permitted												
Satd. Flow (perm)	0	3283	0	0	3032	0	1345	1744	0	0	1693	0
Right Turn on Red				Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		11				6			21		16	
Link Speed (mph)		30				30			30		30	
Link Distance (ft)		1437				1906			634		830	
Travel Time (s)		32.7				43.3			14.4		18.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1061	0	0	695	0	107	49	0	0	76	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	83.0	83.0	0.0	83.0	83.0	0.0	37.0	37.0	0.0	37.0	37.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	78.0			78.0			32.0	32.0			32.0	
Actuated g/C Ratio	0.65			0.65			0.27	0.27			0.27	
v/c Ratio	0.50			0.35			0.30	0.10			0.16	
Control Delay	7.7			10.0			37.9	22.3			27.7	
Queue Delay	0.0			0.0			0.0	0.0			0.0	
Total Delay	7.7			10.0			37.9	22.3			27.7	
LOS	A			B			D	C			C	
Approach Delay	7.7			10.0				33.0			27.7	
Approach LOS	A			B			C				C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 21 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 11.3

Intersection LOS: B

Intersection Capacity Utilization 60.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 18: Belvedere & Lake



## Appendix E

### Cost Estimate Information

**FDOT Long Range Estimation System - Production**  
**Project Details Composite Report**  
**By Version**

**Project:** MIDXWK-O-05-BB

**Letting Date:** 01/2099

**Description:** Mid-Block Crossing

**District:** 09

**County:** 99 DISTRICT/STATE WIDE

**Project Manager:** Cost Model

**Version 1-P Project Grand Total:**

**\$89,594.11**

**Description:** January 2010 Price Update

<b>Pay Items</b>	<b>Description</b>	<b>Total Quantity</b>	<b>Unit</b>	<b>Weighted Avg. Unit Price</b>	<b>Total Amount</b>
0711 11125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24"	72.00	LF	\$4.02	\$289.44
0711 17	THERMOPLASTIC, REMOVE	69.00	SF	\$2.24	\$154.56
0999 25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)	1.00	LS	\$4,266.39	\$4,266.39
	Project Unknowns	.00	%	\$0.00	\$0.00

**Version 1-P Grand Total**

**\$89,594.11**

**FDOT Long Range Estimation System - Production**  
**Project Details Composite Report**  
**By Version**

**Project:** SIDEWK-O-03-BB

**Letting Date:** 01/2099

**Description:** Sidewalk construction; 5' one side, 4 inch depth

**District:** 09

**County:** 99 DISTRICT/STATE WIDE

**Project Manager:** Cost Model

**Version 1-P Project Grand Total:**

**\$119,568.82**

**Description:** January 2010 Price Update

<b>Pay Items</b>	<b>Description</b>	<b>Total Quantity</b>	<b>Unit</b>	<b>Weighted Avg. Unit Price</b>	<b>Total Amount</b>
0101 1	MOBILIZATION	10.00		\$0.00	\$10,352.28
0102 1	MAINTENANCE OF TRAFFIC	2.00		\$0.00	\$2,029.86
0110 1 1	CLEARING & GRUBBING	1.25	AC	\$6,921.88	\$8,652.35
0120 1	REGULAR EXCAVATION	322.66	CY	\$3.68	\$1,187.39
0522 1	SIDEWALK CONCRETE, 4" THICK	2,933.33	SY	\$30.49	\$89,437.23
0570 1 1	PERFORMANCE TURF	3,121.07	SY	\$.71	\$2,215.96
0999 25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)	1.00	LS	\$5,693.75	\$5,693.75
	Project Unknowns	.00	%	\$0.00	\$0.00

**Version 1-P Grand Total**

**\$119,568.82**

**FDOT Long Range Estimation System - Production**  
**Project Details Composite Report**  
**By Version**

**Project:** SHRUSE-O-01-BB

**Letting Date:** 01/2099

**Description:** Two Directional, 12' Shared Use Path

**District:** 09

**County:** 99 DISTRICT/STATE WIDE

**Project Manager:** Cost Model

**Version 1-P Project Grand Total:** \$175,461.90

**Description:** January 2010 Price Update

<b>Pay Items</b>	<b>Description</b>	<b>Total Quantity</b>	<b>Unit</b>	<b>Weighted Avg. Unit Price</b>	<b>Total Amount</b>
0101 1	MOBILIZATION	10.00		\$0.00	\$15,191.51
0102 1	MAINTENANCE OF TRAFFIC	6.00		\$0.00	\$8,598.97
0110 1 1	CLEARING & GRUBBING	3.90	AC	\$6,921.88	\$26,995.33
0160 4	TYPE B STABILIZATION	9,386.67	SY	\$2.51	\$23,560.54
0285701	OPTIONAL BASE, BASE GROUP 01	7,040.00	SY	\$5.61	\$39,494.40
0334 1 11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	528.00	TN	\$92.97	\$49,088.16
0570 1 2	PERFORMANCE TURF, SOD	2,347.00	SY	\$1.78	\$4,177.66
0999 25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)	1.00	LS	\$8,355.33	\$8,355.33
	Project Unknowns	.00	%	\$0.00	\$0.00

**Version 1-P Grand Total** \$175,461.90

**FDOT Long Range Estimation System - Production**  
**Project Details Composite Report**  
**By Version**

**Project:** MIDXWK-O-05-BB

**Letting Date:** 01/2099

**Description:** Mid-Block Crossing

**District:** 09

**County:** 99 DISTRICT/STATE WIDE

**Project Manager:** Cost Model

**Version 1-P Project Grand Total:**

**\$89,594.11**

**Description:** January 2010 Price Update

<b>Pay Items</b>	<b>Description</b>	<b>Total Quantity</b>	<b>Unit</b>	<b>Weighted Avg. Unit Price</b>	<b>Total Amount</b>
0101 1	MOBILIZATION	10.00		\$0.00	\$7,757.07
0102 1	MAINTENANCE OF TRAFFIC	10.00		\$0.00	\$7,051.88
0522 1	SIDEWALK CONCRETE, 4" THICK	10.00	SY	\$30.49	\$304.90
0527 1	DETECTABLE WARNING ON EXISTING WALKING SURFACE, RETROFIT	2.00	EA	\$461.73	\$923.46
0555 1 1	DIRECTIONAL BORE, LESS THAN 6"	505.00	LF	\$14.18	\$7,160.90
0630 1 12	CONDUIT - SIGNALS, FURNISH & INSTALL, UNDERGROUND	27.00	LF	\$4.39	\$118.53
0630 1 13	CONDUIT - SIGNALS, FURNISH & INSTALL, SAWCUT & PLACE UNDER EXISTING PAVEMENT	18.00	LF	\$11.98	\$215.64
0632 7 1	CABLE, SIGNAL, FURNISH & INSTALL	1.00	PI	\$3,635.83	\$3,635.83
0632 8212	CABLE, INTERCONNECT, 1-25 PAIRS, F&I, UNDERGROUND	436.00	LF	\$2.04	\$889.44
0635 1 11	PULL & JUNCTION BOXES, F&I, PULL BOX	4.00	EA	\$326.60	\$1,306.40
0635 1 15	PULL & JUNCTION BOXES, F&I, FIBER OPTICS	1.00	EA	\$815.76	\$815.76
0639 1 23	SIGNALS, ELECTRICAL POWER SERVICE,UNDERGROUND	1.00	AS	\$1,406.81	\$1,406.81
0639 2 1	SIGNALS, ELECTRICAL SERVICE WIRE	252.00	LF	\$1.48	\$372.96
0649 31203	MAST ARM,F&I, WIND SPEED-130,SINGLE ARM,W/O LUMINAIRE-60	1.00	EA	\$22,089.08	\$22,089.08
0650 51311	TRAFFIC SIGNAL, F&I, 3 SECTION, 1 WAY, STANDARD	4.00	AS	\$808.28	\$3,233.12
0653191	PEDESTRIAN SIGNAL, F&I, LED - COUNT DOWN, 1 DIRECTION	2.00	AS	\$668.14	\$1,336.28
0659106	SIGNAL HEAD AUXILIARIES, F&I, TUNNEL VISOR	12.00	EA	\$4.34	\$52.08
0659107	SIGNAL HEAD AUXILIARIES, F&I, ALUMINUM PEDESTAL	1.00	EA	\$823.95	\$823.95
0665 11	PEDESTRIAN DETECTOR, F&I, POLE OR CONTROLLER CABINET MOUNTED DETECTOR STATION & SIGN	2.00	EA	\$169.89	\$339.78
0670 5130	TRAFFIC CONTROLLER ASSEMBLY, F&I, SPECIAL	1.00	AS	\$18,918.15	\$18,918.15
0670 5410	TRAFFIC CONTROLLER ASSEMBLY, MODIFY, NEMA	1.00	AS	\$744.54	\$744.54
0685120	SYSTEM AUXILIARIES, F&I, TELEMETRY TRANSCEIVER	1.00	EA	\$2,023.44	\$2,023.44
0685128	SYSTEM AUXILIARIES, FURNISH & INSTALL, INTERFACE PANEL	1.00	EA	\$1,016.34	\$1,016.34
0700 20 11	SINGLE POST SIGN, F&I, LESS THAN 12 SF	4.00	AS	\$275.96	\$1,103.84
0700 48 18	SIGN PANELS, F & I, 15 OR <	2.00	EA	\$350.59	\$701.18
0706 3	RETRO-REFLECTIVE PAVEMENT MARKERS	10.00	EA	\$3.83	\$38.30
0711 11111	THERMOPLASTIC, STANDARD, WHITE, SOLID, 6"	.04	NM	\$3,151.61	\$126.06
0711 11123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12"	200.00	LF	\$1.89	\$378.00

**FDOT Long Range Estimation System - Production**  
**Project Details Composite Report**  
**By Version**

**Project:** MIDXWK-O-05-BB

**Letting Date:** 01/2099

**Description:** Mid-Block Crossing

**District:** 09

**County:** 99 DISTRICT/STATE WIDE

**Project Manager:** Cost Model

**Version 1-P Project Grand Total:**

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0999 25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)	1.00	LS	\$4,266.39	\$4,266.39
	Project Unknowns	.00	%	\$0.00	\$0.00

**Version 1-P Grand Total**

**\$89,594.11**

## Appendix F

### Meeting Minutes

**MacKenzie**  
Engineering & Planning, Inc.

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(772) 345-1948 • [www.mackenzieengineeringinc.com](http://www.mackenzieengineeringinc.com)

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**To:** Kim Delaney, TCRPC  
**From:** Shaun G. MacKenzie, P.E.  
**Date:** May 17, 2010  
**Re:** Meeting with Palm Beach County MPO

### MPO Meeting

#### **Introduction**

MacKenzie Engineering and Planning, Inc. (MEP) met with Bret Baronak, the Palm Beach County MPO bicycle and pedestrian coordinator.

MEP discussed the project, its status, and timeline.

#### **MPO Planning**

Bret reviewed the current Bicycle and Pedestrian Master Plan Study that is being performed. He stated the project recently had its first public meeting and all the data and results are still in draft form. Therefore, they are not available for sharing at this time. A quick review of the plan showed that most of the interchanges operate poorly for bicycling due to a lack of bike lanes combined with high vehicular traffic volumes.

Other major efforts that are ongoing include studying the feasibility of a shared use path along the F.E.C. right-of-way.

#### **Discussion of Tri-Rail Locations**

Various generators and plans were discussed in relation to each Tri-Rail Station

#### Lake Worth

- Palm Beach Community College is located west of the site
- Lake Worth Road connects directly to the beach
- Just west of the Tri-Rail Station is John Prince Park
- Lake Worth has adopted a bicycle network plan

#### Boynton Beach

- Gateway Boulevard is not a good bike route because it has no or narrow bike lanes

### Boca Raton

- Yamato Road has bike lanes
- The station has bike lockers
- Colleges are located southeast of the station
- T-Rex Corporate Park located west of the station

### **Review of 5-Year Transportation Improvement Program**

A review the 5-year plan showed that the Lake Worth Road resurfacing project from Congress Avenue to West of Lake Osbourne Drive should improve the bicycle lanes along this segment of the facility.

### Kickoff Meeting

#### **Attendance**

The kickoff meeting was attended by the following:

- Shaun MacKenzie (MacKenzie Engineering and Planning, Inc.)
- Kim Delaney (Treasure Coast Regional Planning Council)
- Bret Baronak (Palm Beach MPO)
- Lynda Westin (SFRTA)

### **Palm Beach MPO Bicycle Plan**

Bret provided an update to the MPO's Bicycle Plan. The plan is in the data collection stage of development and is in the process of developing the bicycle specific LOS. Later in the plan, destination analyses will be evaluated. The Bicycle Plan should be completed by the end of the year.

### **Municipal Bicycle Plans**

Lake Worth has a plan that has not been fully adopted. West Palm Beach does not have a true bicycle plan, but has an element within their comprehensive plan. Delray Beach does have a bicycle facility plan. Boca Raton has an existing facilities map and may address bicycling in their comprehensive plan. Facilities in Boca Raton were discussed including the recent completion of a portion of the El Rio Trail north of the Boca Raton Tri-Rail Station.

### **Future Projects**

Shaun discussed some of the potential bicycle and pedestrian projects. A specific issue is that designated bicycle facilities do not exist on almost any facility. Numerous facilities have curb

lanes or wide shoulders, but do not meet the minimum criteria for a designated bicycle lane. Bret said he would not like to see bicycles routed onto sidewalks. This is unsafe and contrary to current bicycle planning. Shaun recommended that bicycle routing should only occur on designated bicycle facilities. This was discussed and agreed by all present. Bret stated that he would like to see wayfinding signage for the Palm Beach bicycle network, but there are liability issues that the MPO is exploring related to placing destination and distance on the signage.

Due to the number of potential bicycle projects identified, we discussed creating short-term, medium term, and long-term project lists.

Shaun discussed a key project being bicycle and pedestrian access across Yamato Boulevard. This project would likely explore a signalized pedestrian / bicycle crossing at the El Rio Trail.

The bike locker project and bicycle storage capacity were discussed. A major element is having bicycle capacity on the trains so that bicycles can be stored on the trains for use at both ends of the trip. The need for this was discussed a potential recommendation from the report.

### **Routing**

There was consensus on pedestrian routing  $\frac{1}{4}$  mile from the stations. Bicycle routing was discussed as being from about 2-3 miles. Bret said guidance is forthcoming that bike routing should be about 3 miles. There was consensus that bicycle routing should be 3 miles.

### **Rails with Trails**

A significant concern adjacent to several of the stations is the ability to travel directly north or south from the stations. In most locations bicycle lanes are challenging to place on the adjacent facilities (e.g. Congress Avenue) due to right-of-way constraints unless the County supported lane reductions or significantly reducing travel lane width to accommodate designated bicycle facilities. A solution to this may be to construct a trail alongside the rail facility within proximity of each station to improve north-south access and travel where right-of-way is available. This was discussed and a “rails with trails” concept needs more exploration and should be discussed in the report, but should not be a recommended improvement. Shaun was tasked with looking into information related to rails with trails that occurred in Miami-Dade County.

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---

**To:** Kim Delaney, TCRPC  
**From:** Shaun G. MacKenzie, P.E.  
**Date:** May 17, 2010  
**Re:** Tri-Rail Bicycle and Pedestrian Feasibility Study  
Meeting with Local Governments

### **Introduction**

MacKenzie Engineering and Planning, Inc. (MEP) met with representatives from the Town of Mangonia Park, City of West Palm Beach, City of Boynton Beach, City of Delray Beach, and contacted the Cities of Boca Raton and Lake Worth. MEP discussed Tri-Rail's bicycle and pedestrian project, its status, and timeline.

#### **City of Delray Beach, Scott Pape and Randal Krejcarek**

The City has a Bicycle and Pedestrian Plan from 2003. As recent as last year, the City had two shuttles that operated service between the Tri-Rail Station and the beach. Due to budgetary issues, the City can only operate 1 shuttle. Staff also stated that SW 10<sup>th</sup> Street has numerous sidewalk gaps on the south side of the facility. There are also issues on NE 2<sup>nd</sup> Avenue / Seacrest Boulevard.

#### **Town of Mangonia Park, Lee Leffingwell**

The Town of Mangonia Park Tri-Rail station is situated off of 45<sup>th</sup> Street and co-located adjacent to an existing Jai alai facility. The station backs up to an existing industrial park. Very little formal bicycle and pedestrian planning has been performed in the Town. The two efforts that have occurred relate to the redevelopment of the Jai alai. The plans submitted improve the bicycle and pedestrian access to the station by providing dedicated bicycle lanes and improved sidewalk. A new residential development has been approved northwest of the station on the south side of the tracks, but has not yet been constructed. Upon construction of the development it will provide a sidewalk from the residential development to the Tri-Rail Station.

#### **City of Boynton Beach, Erik Johnson and Staff**

The City is actively attempting to increase walking and bicycling within the City and is led by the City's Sustainability Team. The City received an ICLIE grant to promote walking and bicycling. The Mall is major attractor west of the station. City hall and a significant population center exist east of I-95. Lawrence Road and Miner Road are viewed as the best candidates to attract

population to Tri-Rail located northwest of the station. City staff is pursuing opportunities to collocate multi-use paths adjacent to existing canals within the canal rights of way. East of I-95, Seacrest Boulevard is viewed as the ideal location for a north-south bicycle facility. However, facility has very limited right of way and the County Engineer does not support lane reductions to install bike lanes on Seacrest Boulevard.

**City of West Palm Beach, Alex Henson**

Our initial discussion on May 3 focused on needs within the City. The biggest need for bicycle facilities is on Tamarind Avenue / Parker Avenue. Creation of bicycle lanes on this facility is challenging due to right-of-way impediments. Additionally, a sidewalk would be an extremely desirable facility on the west side of Tamarind Avenue / Parker Avenue to facilitate connects to the population to the north of the station and the employment to the south of the station. This is currently not feasible due to right-of-way constraints.

The generators in the City include; Alexander w Dreyfoos Jr School of the Arts, downtown municipal buildings, residential neighborhoods north and south of the station, Palm Beach Atlantic University, commercial area off Flagler, City Place, Palm Beach County Convention Center (occasionally), and the waterfront area on Flagler for special events.

The City has two grant projects actively underway. They are streetscape projects along Clematis Street (between Sapodilla and Tamarind) and Quadrille Blvd (between Okeechobee Blvd and Fern St). Also, potential bicycle routes for future implementation are being evaluated by the MPO, using the shared arrow designation, to connect City facilities to the multiuse path along Flagler Drive. Four bicycle / pedestrian crossings are planned along Tamarind Avenue between Okeechobee Blvd and Banyan Blvd to enhance pedestrian access to the station.

Clematis Street is suggested as the best pedestrian through street. The City suggests creating one more either on Fern or Evernia Streets. Bicycle accessibility is very limited with respect to designated bicycle facilities. Many cyclists typically ride in the street with cars or on sidewalks. Right of way is not available in most locations to add bike lanes.

A follow-up conversation was held on June 7 with Alex Henson to discuss the feasibility of some of the proposed improvements. Tamarind Avenue north of the Banyan Blvd has right-of-way for bike lanes, but require removal of parking on one side of the road. Removing parking likely would not be supported by the CRA. This segment of Tamarind Avenue is recommended as a shared bicycle and automobile facility. Tamarind Avenue from Okeechobee Boulevard to Banyan Boulevard is a five-lane undivided facility. A discussion ensued related to a lane reduction on this segment to facilitate bicycle lanes. The City had concerns related to current and future traffic volumes on this segment. It was also mentioned that redevelopment is planned on the east side of Tamarind Avenue between Clematis Street and Fern Street. This segment of Tamarind Avenue is a Strategic Intermodal System (SIS) road connector that provides a portion of the connection between the I-95 and West Palm Beach Intermodal Center

SIS facilities. Parker Avenue is currently a four-lane undivided roadway, but is planned for a lane reduction to three lanes. Curb lanes (undesignated bike lanes) are planned, but bike lanes are not planned for the facility because there is not enough right-of-way for bike lanes and three full size vehicle lanes.

Lake Avenue was discussed as a north-south bicycle route, which does appear feasible. The only issue discussed related to removal of on-street parking on Lake Avenue to accommodate bike lanes. The other east-west road connections not in downtown (36<sup>th</sup> Street, 15<sup>th</sup> Street, Flamingo Drive, Hollywood Place/Monroe Drive) offer similar opportunities and issues.

Evernia Street was discussed as the most likely potential candidate for exclusive bicycle lanes in the downtown. Right-of-way exists between Tamarind Avenue and Flagler Drive, but would require elimination or reconfiguration of parking along the facility. The City expressed concern about eliminating / reconfiguring parking along Evernia Street. Any change in parking would need to be examined in detail with the City's parking management division.

Okeechobee Boulevard is proposed for improvements between Australian Avenue and Tamarind Avenue / Parker Avenue. The improvements will add sidewalks on both sides of the road, which do not currently exist, but will not provide bicycle lanes for this segment. This means that there will continue to be gap in the bicycle network for this segment.

#### **City of Lake Worth, Joan Oliva**

A discussion was held with Joan Oliva with the City's CRA. The CRA's Bicycle Plan was just adopted by the City. There were no changes to plan between the draft and adopted plan. Lake Worth High School is a major local generator of pedestrian and bicycle traffic. One needed pedestrian project that is identified in the Treasure Coast Regional Planning Council's TOD plan is a reconstruction of the Lake Worth Road / North A Street roundabout to make it more pedestrian friendly. Another recommendation that was made changing several of the north-south streets in the City from one-way streets to two-way streets, which would likely have a negative impact on the ability to provide bicycle lanes within the rights-of-way of these facilities. The City also has some funding available from the Safe Routes to School Program to install pedestrian and bicycle improvements. The "southeast connector" from the Tri-Rail station to 6<sup>th</sup> Avenue south is expected to need right-of-way before it can be completed. The priorities for projects were discussed with no objections from the City.

#### **City of Boca Raton, Joy Puerta**

Boca Raton did not meet or discuss their issues, but provided data related to their pedestrian and bicycle planning efforts.

## Appendix G

### Mangonia Park Entrance Modification

Mangona Park Tri-Rail Entrance  
3: 45th Street & Tri-Rail Entrance

Remove Southbound left-turn lane  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑↑		↑	↑↑↑		↑	↑		↓	↔	
Volume (vph)	96	1642	276	82	1064	36	227	3	65	26	6	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1770	4973	0	1770	5060	0	1770	1595	0	0	1690	0
Flt Permitted	0.950			0.950			0.705				0.893	
Satd. Flow (perm)	1770	4973	0	1770	5060	0	1313	1595	0	0	1535	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			6			71			47	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		964			801			609			623	
Travel Time (s)		21.9			18.2			13.8			14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	2085	0	89	1196	0	247	74	0	0	82	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	18.0	65.0	0.0	16.0	63.0	0.0	39.0	39.0	0.0	39.0	39.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	11.6	67.5		10.6	66.6		26.9	26.9			26.9	
Actuated g/C Ratio	0.10	0.56		0.09	0.56		0.22	0.22			0.22	
v/c Ratio	0.61	0.74		0.57	0.43		0.84	0.18			0.22	
Control Delay	67.1	22.6		66.8	17.2		67.9	9.2			18.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	67.1	22.6		66.8	17.2		67.9	9.2			18.3	
LOS	E	C		E	B		E	A			B	
Approach Delay		24.7			20.6			54.4			18.3	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 25.7

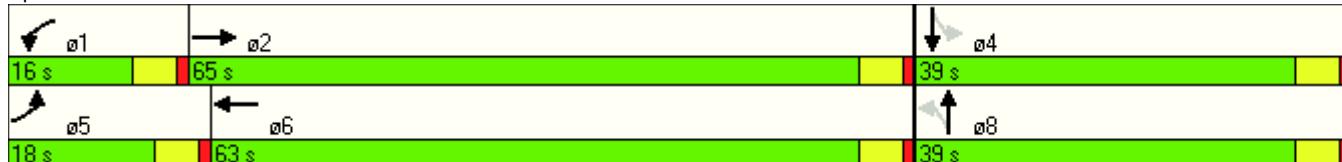
Intersection LOS: C

Intersection Capacity Utilization 76.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: 45th Street & Tri-Rail Entrance



Mangonia Park Tri-Rail Entrance  
3: 45th Street & Tri-Rail Entrance

Remove Southbound Left-turn Lane  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑↑		↑	↑↑↑		↑	↑		↓	↔	
Volume (vph)	138	1240	126	153	1585	20	225	4	113	26	2	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1770	5014	0	1770	5075	0	1770	1593	0	0	1672	0
Flt Permitted	0.950			0.950			0.691				0.886	
Satd. Flow (perm)	1770	5014	0	1770	5075	0	1287	1593	0	0	1504	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			2			123			59	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		964			801			609			623	
Travel Time (s)		21.9			18.2			13.8			14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	1485	0	166	1745	0	245	127	0	0	89	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	23.0	55.0	0.0	25.0	57.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Act Effct Green (s)	14.8	61.9		16.0	63.1		27.1	27.1			27.1	
Actuated g/C Ratio	0.12	0.52		0.13	0.53		0.23	0.23			0.23	
v/c Ratio	0.69	0.57		0.70	0.65		0.84	0.28			0.23	
Control Delay	66.3	22.4		65.4	23.7		68.1	7.8			15.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	66.3	22.4		65.4	23.7		68.1	7.8			15.4	
LOS	E	C		E	C		E	A			B	
Approach Delay		26.5			27.3			47.5			15.4	
Approach LOS		C			C			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 28.6

Intersection LOS: C

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: 45th Street & Tri-Rail Entrance

